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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/717,028	11/18/2003	Bo Li	H0005567.361.46 USA -4780	7345
128 7590 12/20/2010 HONEYWELL INTERNATIONAL INC. PATENT SERVICES 101 COLUMBIA ROAD P O BOX 2245 MORRISTOWN, NJ 07962-2245			EXAMINER JOHNSON, CONNIE P	
			ART UNIT	PAPER NUMBER
			1722	
			MAIL DATE	DELIVERY MODE
			12/20/2010	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/717,028

**Applicant(s)**

LI ET AL.

**Examiner**

CONNIE P. JOHNSON

**Art Unit**

1722

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 December 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3,6,11-15,18,26-31 and 59 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,6,11-15,18,26-31 and 59 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-946)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/2/2010 has been entered.
2. Claims 1, 3, 6, 11-15, 18, 26-31, 37 and 59 are presented.
3. Claim 1 is amended.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3, 6, 11-15 and 59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy et al., U.S. Patent No. 6,506,497 B1 in view of Lu et al., WO 03/088343 A1 as evidenced by Kennedy et al., U.S. Patent Publication No. 2007/0272123 A1.

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1)

a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention “by another”; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Kennedy teaches an anti-reflective coating composition comprising one or more organic based compounds (col. 2, lines 63-67). The composition also comprises silane reactants and a phase transfer catalyst, which meet the limitations of the material modification agents in claim 1 (col. 6, lines 22-34). The organic compounds have an absorption peak at least 10nm wide over wavelengths 248, 193 and 365nm (col. 4, lines 44-47). The organic compounds include anthraflavic acid, 9-anthracene carboxylic acid, 9-anthracene methanol and alizarin (col. 2, lines 63-67 and col. 3, lines 1-3). The composition also comprises inorganic compounds including silicon based compounds, such as methylsiloxane, methylsilsesquioxane, phenylsiloxane and hydrogensilsesquioxane polymers (col. 3, lines 7-22 and col. 4, lines 5-32). The general formula for a hydrogensilsesquioxane is  $(H_{1.6}SiO_{3/2})_{2n}$ , which is representative of the

structure in present claim 15. Kennedy does not teach specific adhesion promoters in the composition.

Additionally, Lu teaches a spin-on-composition comprising a silicon compound (page 14), organic absorbing compound and a catalyst. The catalyst comprises tetramethylammonium acetate (page 16, line 14). Although not exemplified as an adhesion promoter, the catalyst facilitates reactions and tetramethylammonium acetate is well known as an adhesion promoter in the presence of a silicon containing compound as evidenced by Kennedy ('123) (page 5, [0034]). It would have been obvious to one of ordinary skill in the art to use tetramethylammonium acetate of Lu in the composition of Kennedy ('497) to facilitate the reaction with the silicon containing compound and form the anti-reflective coating composition.

6. Claims 1, 27 and 29-31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy et al., U.S. Patent No. 6,506,497 B1 in view of Lu et al., WO 03/088343 A1 as evidenced by Kennedy et al., U.S. Patent Publication No. 2007/0272123 A1 and Thies et al., U.S. Patent Publication No. 2009/0029145 A1.

Kennedy teaches an anti-reflective coating composition comprising one or more organic based compounds (col. 2, lines 63-67), compounds that are representative of material modification agents, such as silane reactants and a phase transfer catalyst (col. 6, lines 22-34) and a silicon-containing inorganic compound (col. 3, lines 7-22 and col. 4, lines 5-32) as relied upon above. Kennedy also teaches that the organic absorbing compound has an absorption peak at least 10nm wide over wavelengths 248, 193 and 365nm (col. 4, lines 44-47). The composition also comprises methylphenylsilsesquioxane, methylsilsesquioxane, methylsiloxane and phenylsiloxane

polymers (col. 4, lines 5-10) (claim 59). Kennedy does not teach specific compounds as adhesion promoters. However, Kennedy teaches ethoxy-containing silane reactants in the composition. The ethoxy-containing silane reactants are well known in the art to form adhesive compounds as evidenced by Thies et al, page 6, [0066]). The ethoxy-containing silane reactants are representative of the alkoxy-containing silane monomer in present claim 31. Therefore, it would have been obvious to one of ordinary skill in the art that ethoxy-containing silane monomers (col. 6, lines 1-20) and silicate polymers would also function as adhesion promoters by the teachings of Kennedy.

7. Claims 1, 3, 11, 12, 13, 18, 26, 28, 29, 30, 31 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ravichandran et al., U.S. Patent No. 6,677,392 B2 in view of Hayashi et al., U.S. Patent Publication No. 2003/0091838 A1 and further in view of Baldwin et al., U.S. Patent Publication no. 2002/0068181 A1.

Ravichandran teaches an absorbing composition consisting of an inorganic compound, an absorbing compound and a material modification agent (Column 9, lines 50-59 and column 10, lines 55-67). The viscosity improvers, light stabilizers, biocides and antistatic agents meet the limitations of material modifiers (col. 10, lines 56-60). The absorbing compounds include an epoxy carboxy resin and a silane modified acrylic melamine (column 10, line 9) as claimed in instant claim 7. In addition, when water-soluble, water miscible or water dispersible coatings are preferred, ammonium salts of acid groups present in the resin are formed. For example, a powder coating composition can be prepared by reacting glycidyl methacrylate with selected alcohol components (column 23, lines 49-53). Ravichandran also teaches silicon oxide as an inorganic

compound used in combination with polysiloxanes and other activators and ligands as a stabilizer in the polymer composition (column 12, lines 20-41). Ravichandran also teaches phosphites (column 19, no. 4) as stabilizers used in the composition as in instant claim 18. Adipic acid and diphenylacetic acid are representative of weak acids (claim 28) (col. 19, lines 50-51). In reference to claims 29 and 30, crosslinked polymers such as phenol/formaldehyde resins and epoxy acrylates are also used as stabilizers in the composition (column 14, no. 21 and 24). Ravichandran teaches adhesion promoters used in polymerization includes dialkoxysilanes, trialkoxysilanes and other similar silane intermediates (column 27, lines 56-61) as in instant claim 31. Ravichandran does not teach the adhesion promoters as in claim 1 of the invention nor that the organic absorbing compound has an absorption peak of at least 0.5nm wide at wavelengths of less than 375nm.

However, Hayashi teaches a film-forming composition comprising a siloxane polymer with a structure as in formula (3) on page 1. The composition also comprises an organic compound (page 2, [0025-0026]) and an ammonium compound. The ammonium compound forms a composition with a low dielectric constant, high modulus and excellent adhesion to the substrate (page 4, [0043]). The ammonium compound includes ammonium nitrate (page 4, [0050]), tetramethylammonium nitrate, tetramethylammonium acetate (page 7, [0055-0056]). It would have been obvious to one of ordinary skill in the art that ammonium nitrate, tetramethylammonium nitrate or tetramethylammonium acetate would combine with the silicon polymer in the composition of Ravichandran to form a silicon-based film with a low dielectric constant, high modulus and excellent adhesion to the substrate.

Additionally, Baldwin teaches a coating composition comprising an organic absorbing compound, an inorganic based compound and a silane reactant. The organic absorbing compound has an absorption peak at least approximately 10nm wide wavelength range at wavelengths less than 375nm (page 2, [0014]). The organic absorbing compounds have significant absorption at sub 200nm wavelengths. Ravichandran teaches photolithographic compositions that absorb at wavelengths of less than 375nm. Therefore, it would have been obvious to one of ordinary skill in the art to add the organic absorbing compound of Baldwin in the composition of Ravichandran because Baldwin teaches the organic absorbing compounds are suitable for photolithographic compositions.

8. Claims 1 and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kennedy et al., U.S. Patent No. 6,506,497 B1 in view of Dammel et al., U.S. Patent Publication No. 2004/0166434 A1.

Kennedy teaches an anti-reflective coating composition comprising one or more organic light-absorbing compounds, an inorganic compound and a silane reactant as relied upon above. Kennedy does not teach TMAA, TMAN or the compounds in claim 37.

However, Dammel teaches a resist coating composition comprising a polymer, a photoacid generator and an alkaline solution. The alkaline solution includes tetramethylammonium acetate (TMAA) (page 19, [0095]). It would have been obvious to one of ordinary skill in the art to use the tetramethylammonium acetate of Dammel in



the resist composition of Kennedy because the TMAA promotes adhesion between the resist and antireflective layers.

***Response to Arguments***

9. Applicant's arguments filed 12/2/2010 have been fully considered but they are not persuasive.

10. Applicant argues that the at least one material modification agent requires at least one adhesion promoter. Further, that claim 10 is not cited in any of the 103(a) rejections.

Lu is relied upon to teach tetramethylammonium acetate in a spin on composition. Tetramethylammonium acetate is a known adhesion promoter as evidenced by Kennedy ('123) (page 5, [0034]). Further, Claim 10 was previously cancelled in the 102(e) over Kennedy. Therefore, it is unclear why applicant is referring to claim 10.

11. Applicant argues on page 8, that Kennedy does not teach that the at least one adhesion promoter does not initiate crosslinking in the composition. Further, that the silanes in Kennedy are not adhesion promoters, but are forming the composition.

Kennedy is not relied upon for the teaching of an adhesion promoter. Lu teaches tetramethylammonium acetate in a film-forming composition. Further, tetramethylammonium acetate is well known as an adhesion promoter in the presence of a silicon containing compound as evidenced by Kennedy ('123) (page 5, [0034]). The ammonium compounds are the same as applicant discloses in claim 1 and therefore are expected to function as adhesion promoters in the silicon-containing composition without a crosslinking function. In present claim 1, the only silane referred to are the

organic absorbing compounds. Kennedy teaches 9-anthracene carboxy-alkyl triethoxysilane, phenyltriethoxysilane, phenyltriethoxysilane, 10-phenanthrenen carboxy-methyl triethoxysilane, 4-ethoxyphenylazobenzene-4-carboxy-methyltriethoxysilane and 4-methoxyphenylazobenzene-4-carboxy-methyl triethoxysilane.” Of the silanes disclosed in present claim 1 as the organic absorbing compounds, Kennedy teaches 9-anthracene carboxy-methyl triethoxysilane and phenyltriethoxysilane (col. 5, lines 18-30). Further, the silanes in present claim 1 are part of a larger group of organic absorbing compounds, not adhesion promoters as argued on page 7, and are not required to meet the limitations of present claim 1.

12. Applicant argues that the Examiner is pulling individual pieces from references and putting them together to form claims, but not considering the technology. Further, stating that since Hayashi mentions ammonium compounds that one of ordinary skill in the art producing different compositions would consider them as not proper, since the assumption of chemical interactions cannot be assumed when the underlying constituents of the composition are different.

Ravichandran is not relied upon for the teaching of an adhesion promoter. Hayashi teaches ammonium nitrate, tetramethylammonium nitrate or tetramethylammonium acetate in a film-forming composition. The ammonium compounds are the same as applicant discloses in claim 1 and therefore are expected to function as adhesion promoters in the silicon-containing composition without a crosslinking function.

13. Examiner acknowledges applicants' request for an interview after final. Applicants' request is granted. On Monday, December 6, 2010 Examiner called Sandra

Thompson and left a message to schedule the interview. However, as of date, Ms. Thompson has not returned telephone call.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Connie P. Johnson whose telephone number is 571-272-7758. The examiner can normally be reached on 7:30am-4:00pm Monday thru Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Connie P. Johnson/  
Examiner, Art Unit 1795

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/Cynthia H Kelly/

Supervisory Patent Examiner, Art Unit 1722